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Mid-America Ports Study Executive Report Mid-America's Ports

Tippett-Abbott-McCarthy-Stratton, New York

Prepared for

Maritime Administration, Washington, DC Office of Ports and Intermodal
Systems

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IANA MINNESOTA MISSISSIPPI

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VIRGINIA U.S. MAP

MINNESOTA MISSISSIPPI

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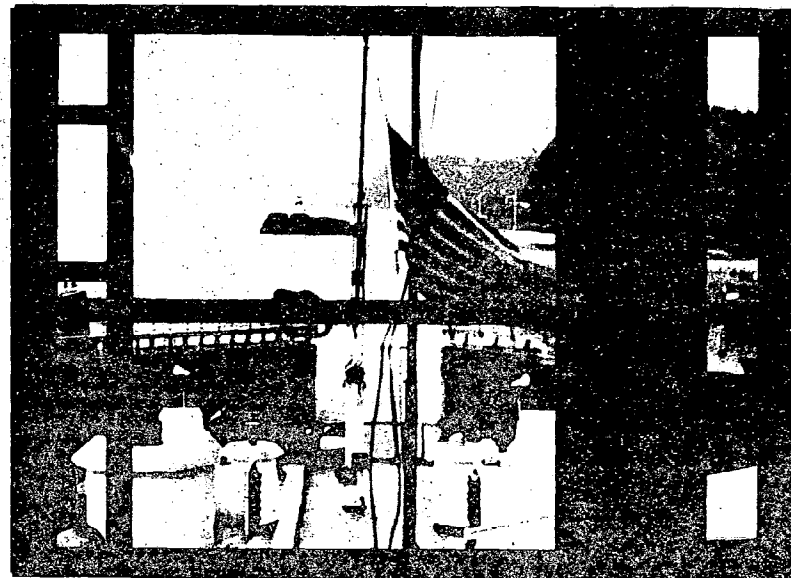
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U.S. Maritime Administration
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State of Arkansas
State of Illinois
State of Iowa
State of Kansas
State of Kentucky
State of Louisiana
State of Minnesota
State of Mississippi
State of Missouri
State of Nebraska
State of Ohio
State of Oklahoma
State of Pennsylvania
State of Tennessee
State of West Virginia
State of Wisconsin



Cooperating Agencies

U.S. Army Corps of Engineers
U.S. Department of Transportation
Ozarks Regional Commission

Consultants

Tippett-Abbott-McCarthy-Stratton
Temple, Barker & Sloane, Inc.
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The document is a briefing report on the major study of ports and cargo facilities on the Mississippi River, its tributaries, the Tennessee-Tombigbee and Gulf Intercoast waterways. Containing in summary form the findings of the main report, Volume I.

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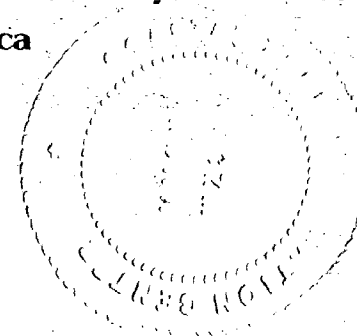
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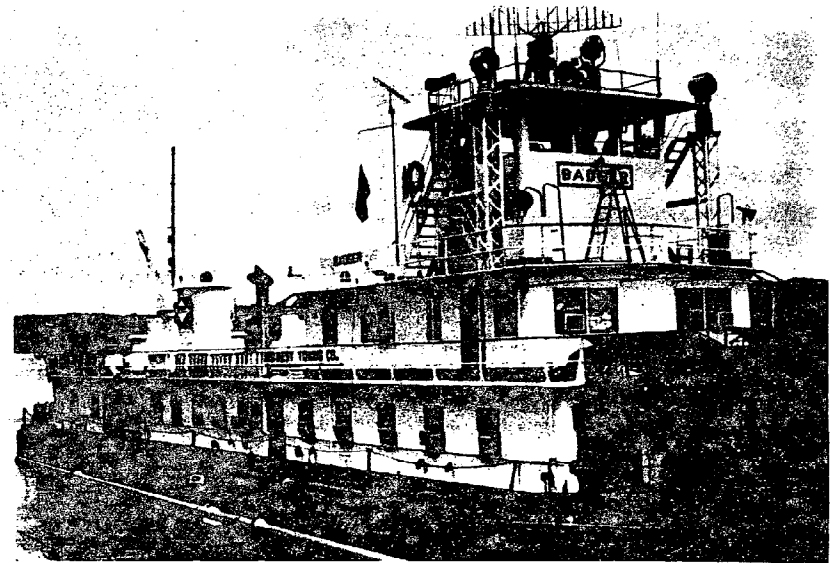
Mid-America's
Ports

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2

Mid-America's Ports: Conservation and Energy

There is strong economic justification for inland waterway transportation. The reduction in transport costs, opening up of areas, and increases in job opportunities have been shown by many different studies. Less tangible but nonetheless real benefits arise from the land conservation features of planned port development and from the energy conservation features of water transport.

Conservation of waterfront land is rarely complementary with commercial waterway development. The pursuit of one can conflict with the other. But on Mid-America's inland waterways, proper port and terminal development is *the* way to

promote riverfront conservation.

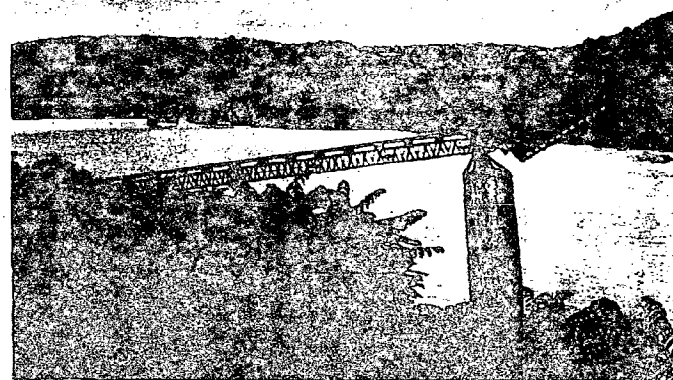
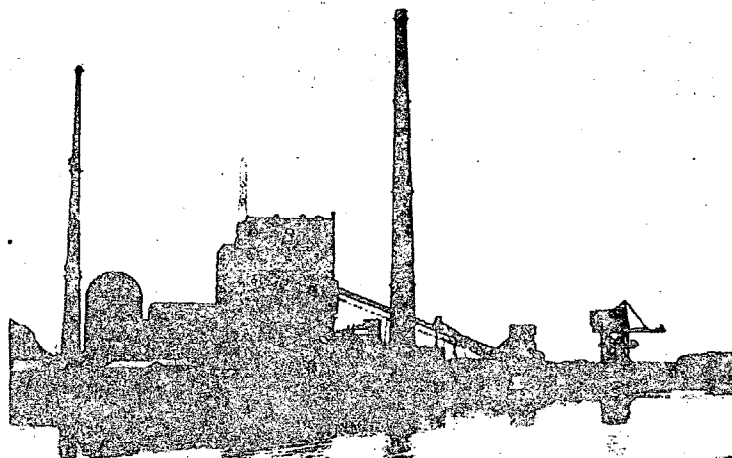
Historically, sites for terminals were selected primarily because they were readily accessible to rail and roads. Land use, regional development needs, and environmental concerns were secondary considerations. As a result, these facilities are strung along Mid-America's river network. This approach, though an embodiment of America's independent economic spirit, is not the most efficient use of increasingly precious riverfront.

Coordinated development of marine terminals could provide benefits for both the public and private sectors. Coordinated terminal grouping would conserve a

dwindling natural resource without violating the independence of terminal owners. Facility grouping would also conserve fuel and time. Towing, fleetings and security would become more efficient, as would services such as spill clean up.

Coordinated plans for the development of Mid-America's inland ports would see a rare and happy union of conservation and development.

Conservation of energy is a major benefit that derives from inland waterway development. Barges are more energy efficient than either railroads or intercity trucks. It has been estimated that waterways transportation of freight provides

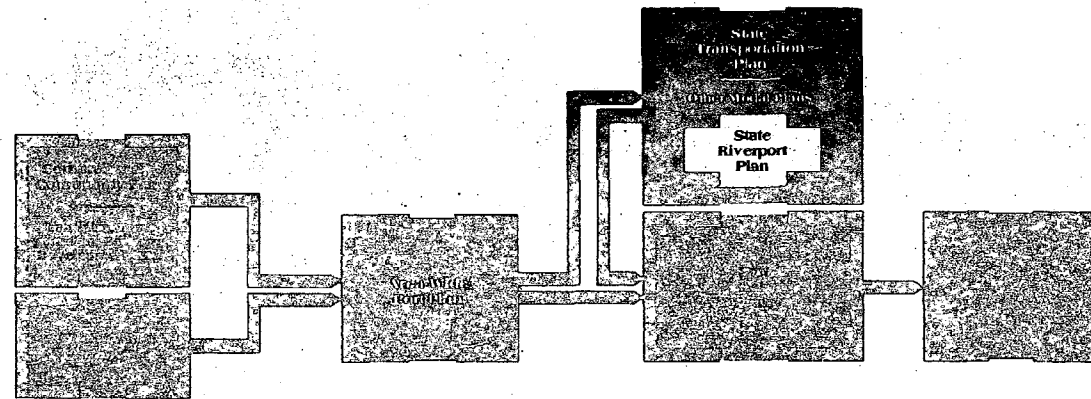


250 ton miles of transport per gallon of fuel in comparison to rail with 200 ton miles per gallon and truck with 58 ton miles per gallon. The inland waterways are currently being utilized for the transport of 230 million tons of energy products annually. By the year 2000, waterways will be transporting 490 million short tons of these products annually. As the nation's first fossil fuel returns to favor, coal traffic on the inland waterways will increase dramatically. In the years ahead, low sulphur western coal will be increasingly transshipped by rail to barge to serve mid-western and southern markets.

At present, the inland water-

ways of Mid-America's 17 states are carrying 440 million tons of cargo or about one-quarter of the nation's total foreign imports and exports and domestic waterborne commerce. The nation must transport its energy commodities, and all commodities, in the most efficient manner possible.

Waterborne transport through the Mid-America ports and waterways system presents the nation with the most attractive alternative. It is essential, therefore, to establish a framework for action that will insure the most effective development of the waterway system.



4

Public and Private Actions

State transportation plans are being promulgated throughout Mid-America, but they generally lack a meaningful riverport component. The need exists for improved cooperation among the Federal, state and local levels of government and private interests in furthering the development of inland ports.

The Federal Government, historically has played a pivotal role in the development of the waterways, and could further aid development of this vital national resource. It should encourage states to create statewide riverport plans that complement the overall inter-modal transportation network. It could assist in funding such plan-

ning and in providing research and analytical support to foster the most effective planning.

The state government should assign responsibility for promoting the orderly development of inland river ports to a principal agency and this agency should proceed with the preparation of a statewide plan. In this effort, the state should seek to develop the most effective inter-modal transportation system; it should do so in cooperation with other states, the U.S. Maritime Administration and other Federal agencies. The state government should work with local government and private interests to encourage the development of river ports

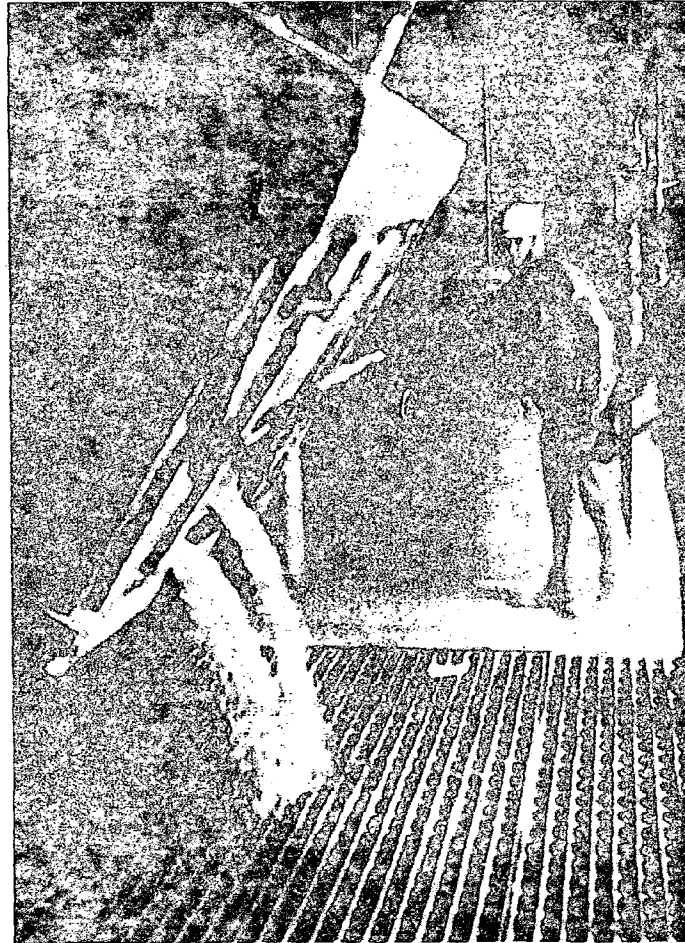
consistent with such plans.

The local port authority should participate actively in the statewide planning effort to insure that their needs are adequately provided for and that port development plans are consistent with other community needs and plans for use of the riverfront. The local authority should prepare a master plan for the port or ports within its jurisdiction. It should then proceed with the funding and implementation of facilities normally provided by public authorities and encourage and facilitate the development of private facilities in the manner provided for in the master plan.

A voluntary association of Mid-

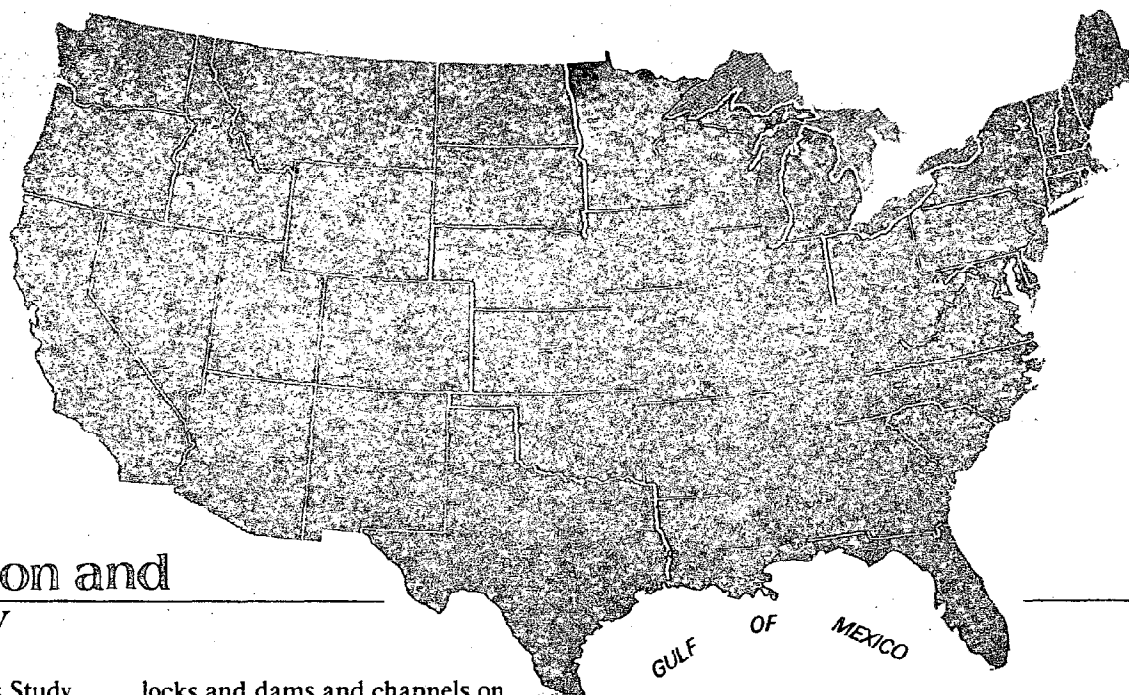
America port officials is desirable as a channel of communication with the Federal Government and states and to assist in areawide planning.

In brief, riverport planning should be better coordinated, intensified and made more effective at state and local levels and also at the intermediate areawide level. Support is needed from each sector to: conserve precious fuel, create long stretches of open riverfront, enrich the beauty and the businesses of communities along the waterways, provide for the continued transport of vital energy and food commodities, buttress the intermodal transport system of the United States, and make the best of



a natural resource available to further serve a nation it has served for over 200 years.

Mid-America
Study Area



6

Organization and Scope of Study

The Mid-America Ports Study is a joint effort of 17 Mid-America states and the Maritime Administration of the U.S. Department of Commerce to determine future needs for inland river ports. These states and the Maritime Administration jointly financed and directed the study and participated in data collection, analysis, and review.

The study focuses on river port developments and commerce movements along the 15,000 miles of waterway within the study area. To evaluate these developments, the study includes investigations of railroads and pipelines, marine transportation technology, and capacities and operations of the numerous

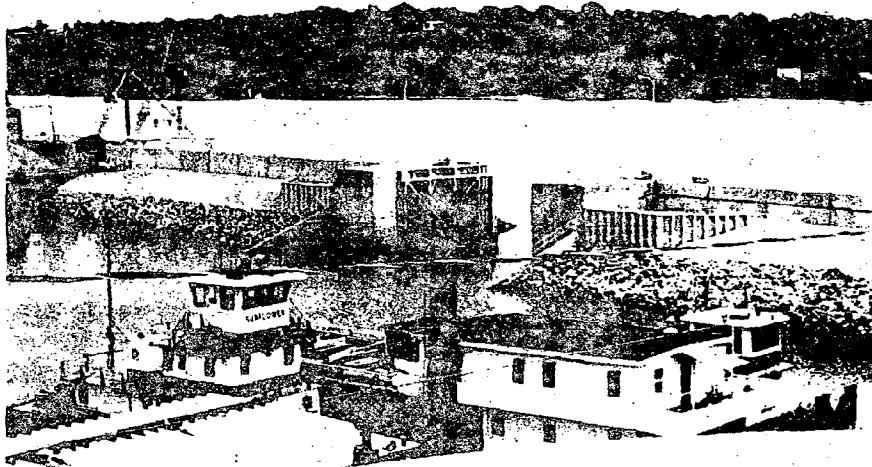
locks and dams and channels on the inland waterway system.

Information on the existing marine terminals located along the Mid-America Waterway System was collected by each of the states participating in the study. These data were tabulated by the Maritime Administration. The study was performed by Tippetts-Abbett-McCarthy-Stratton with the assistance of Temple Barker and Sloane, Inc.; Chase Econometric Associates, Inc.; and the Institute of Public Administration.

THE MID-AMERICA STATES

Alabama
Arkansas
Illinois
Iowa
Kansas
Kentucky
Louisiana
Minnesota
Mississippi

Missouri
Nebraska
Ohio
Oklahoma
Pennsylvania
Tennessee
West Virginia
Wisconsin



The Past and Present:

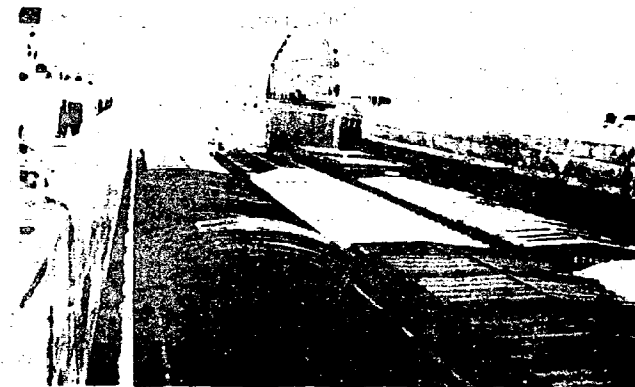
Waterways of Mid-America

National interest in the navigable waters of Mid-America is as old as our nation. In 1787 the Continental Congress declared the navigable waters leading into and between the St. Lawrence and Mississippi Rivers to be common highways open to all on equal terms. In 1789 the Federal Government made the first improvements to the harbors and waterways.

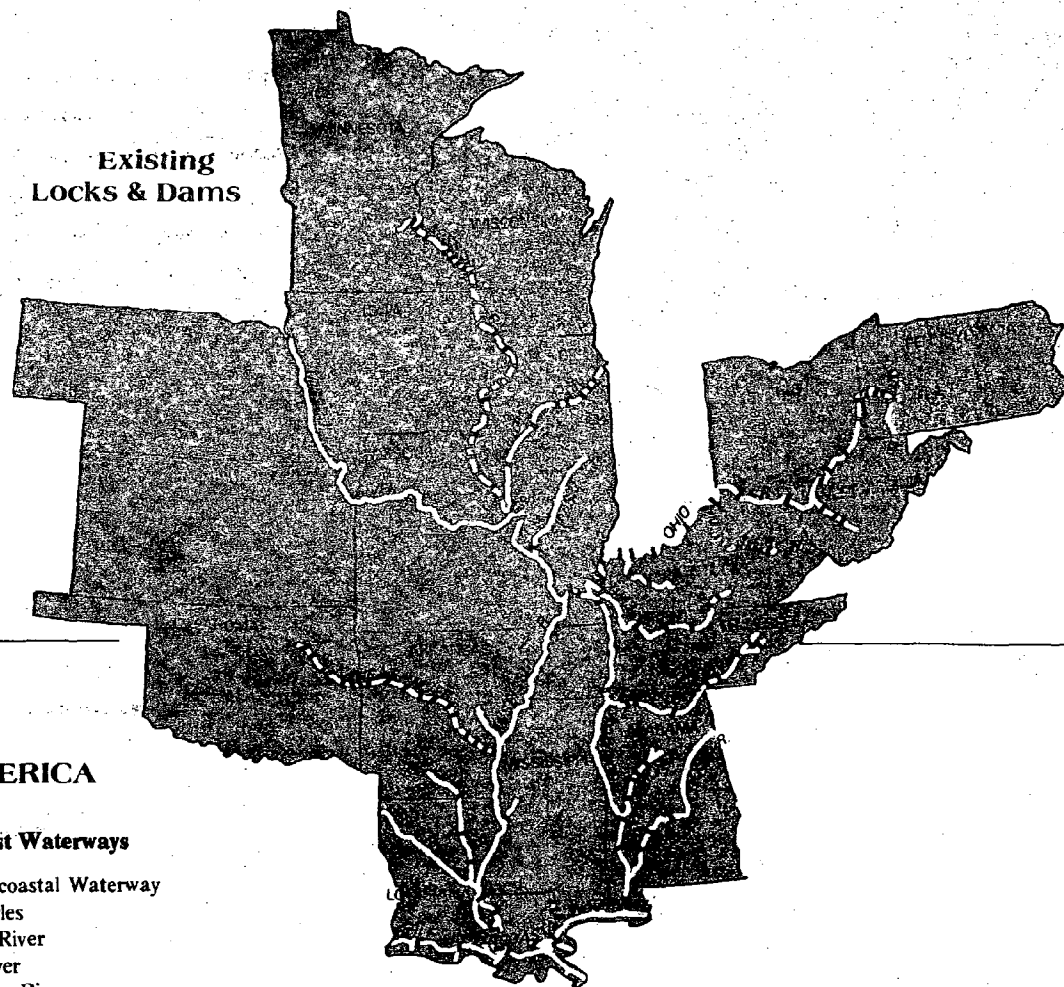
Today, Mid-America's waterways comprise 15,000 miles of navigable channels with 157 locks and dams; most channels on the waterways are maintained for navigation by barges with drafts up to nine feet.

This study identifies 13 locks

and dams on the upper Mississippi, Illinois, Tennessee, and Ohio Rivers and the Gulf Intracoastal Waterway which will become constraints to the free movement of waterborne traffic before year 2000. Unless additional lock capacity is provided, cargo will be diverted from the waterways and the full multimodal potential of Mid-America's ports will not be realized.



Existing
Locks & Dams



WATERWAYS OF MID-AMERICA

Mississippi River System

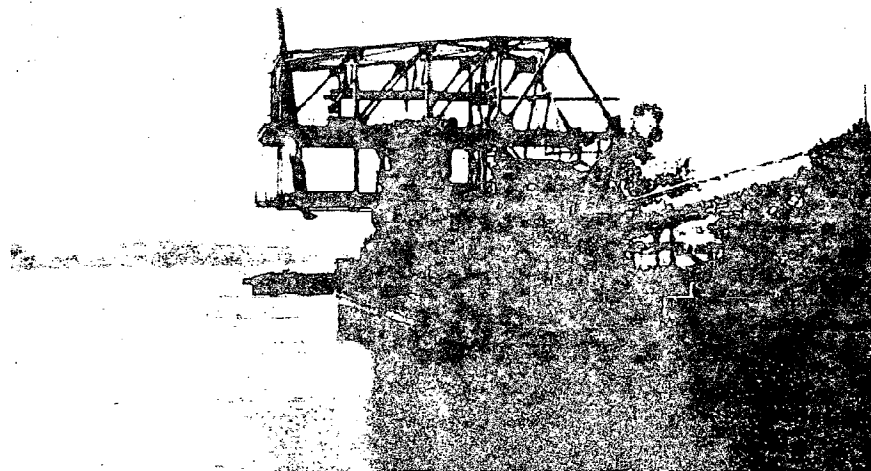
Mississippi River
Minnesota River
Missouri River
Arkansas River
Ouachita River
Illinois Waterway
Ohio River
Monongahela River
Allegheny River
Kanawha River
Kentucky River
Green River
Cumberland River
Tennessee River

Gulf Coast Waterways

Gulf Intracoastal Waterway
Lake Charles
Calcasieu River
Sabine River
Atchafalaya River
Port Allen-Morgan City Route

Alabama Rivers

Mobile River
Tombigbee River
Black Warrior River
Alabama River
Coosa River
Chattahoochee River



The Present:

Ports of Mid-America

9

As part of the comprehensive data collection effort for this study, the first detailed inventory of marine terminal facilities on Mid-America's waterways was conducted. Data were collected on approximately 1,200 marine terminals. Nearly 70 percent of the terminals handle a single cargo type. Single-purpose facilities handling refined petroleum products, grains and coal account for 40 percent of the region's waterway terminals. Mid-America's terminals use over 7,000 acres of land for the storage of general cargo and dry-bulk commodities. Additional areas are used for 340 million barrels of tank storage for liquid bulks and 355 million bushels of

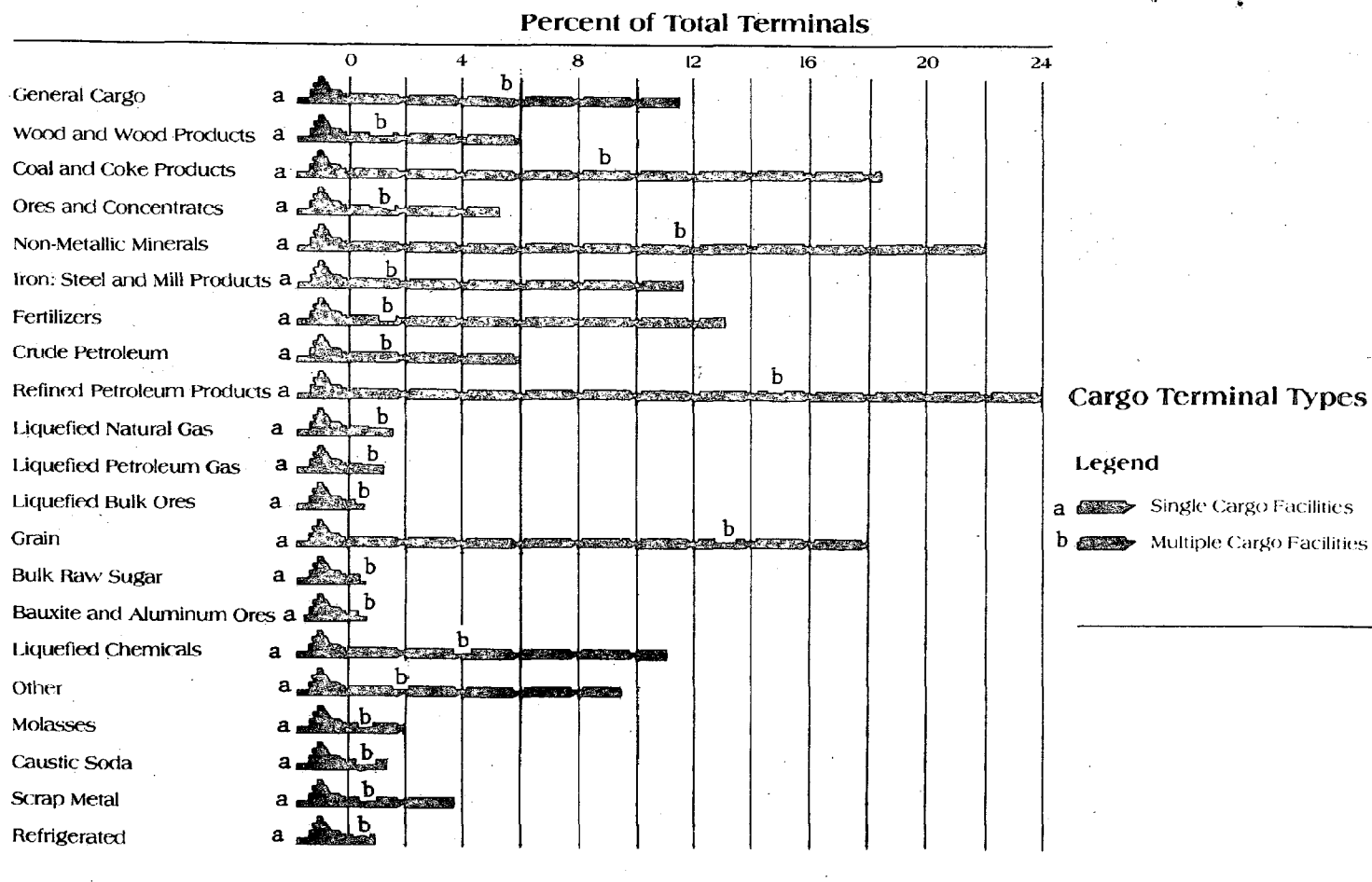
elevator storage for grains. The inland waterway terminals have almost 700 pieces of equipment for the handling of general cargo commodities, over 1,000 for dry-bulk commodities, over 300 for the

handling of grains, and about 300 for liquid bulks.

The annual cargo handling capacities of the Region's terminals are concentrated in six major commodities.

MAJOR COMMODITIES TERMINAL CAPACITIES




	Shipping Terminals	Receiving Terminals
Petroleum Products	210 million tons	310 million tons
Crude Petroleum	220 million tons	160 million tons
Coal	200 million tons	160 million tons
Chemicals	170 million tons	140 million tons
Grains	80 million tons	50 million tons
Fertilizers	50 million tons	40 million tons

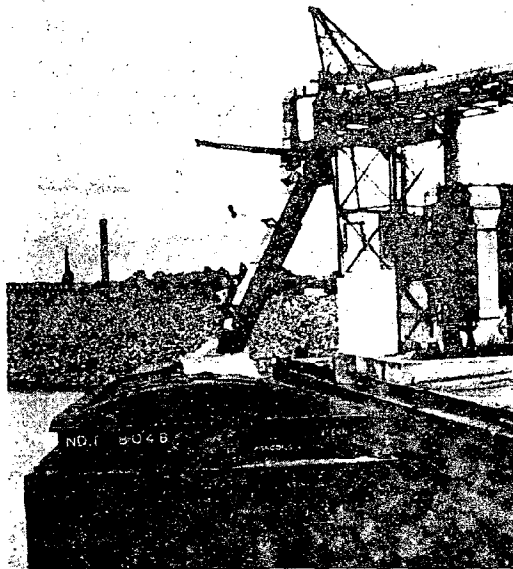
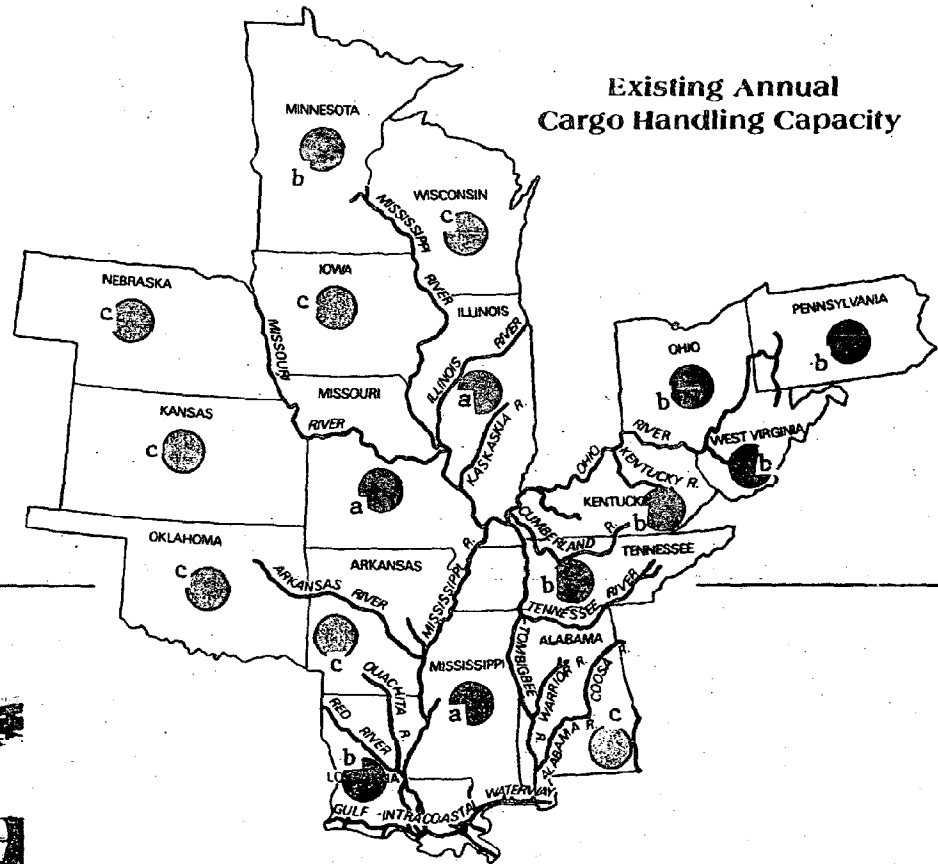


Over 25 percent of the area's capacity is used for the loading and discharging of liquid bulk petroleum products. Crude petroleum facilities and coal handling facilities each account for approximately 17 per-

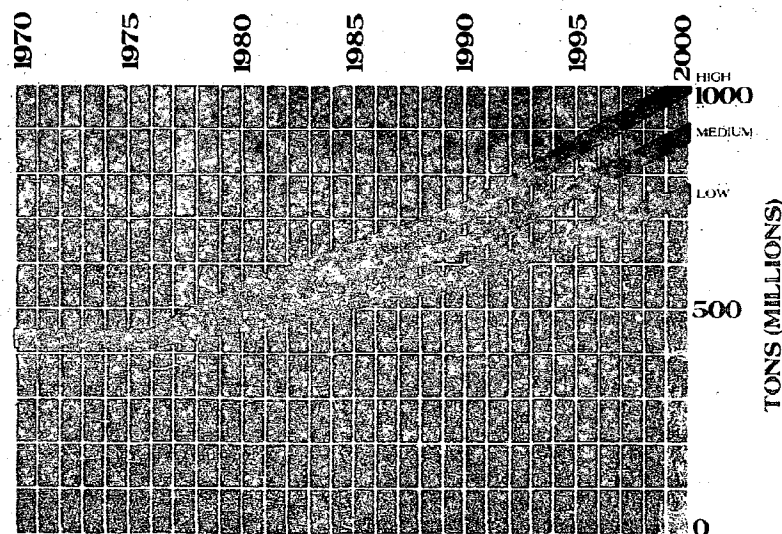
cent of the region's total capacity. The states of Missouri and Illinois combined account for over 30 percent of the study area's handling capacity.

Legend

- a  Greater than 300 million short tons
- b  100 to 299 million short tons
- c  Less than 100 million short tons



**Forecast
Commodity Growth**
All Commodities



The Present and Future:

12

Mid-America Waterway Commerce

Practically all of the 154 commodity types shipped in the United States move through Mid-America's inland port facilities. These were aggregated into 20 commodity categories for analysis.

Ports on the inland waterway system of Mid-America received 440 million tons of cargo and shipped an equal volume in 1976. Coal, petroleum and petroleum products, chemicals, grains, and fertilizers account for three-quarters of the total waterborne commerce on the system. There is diversity in the pattern of waterborne commodity movements. Grain shipments, for example, originate largely in the northern reaches of the study area

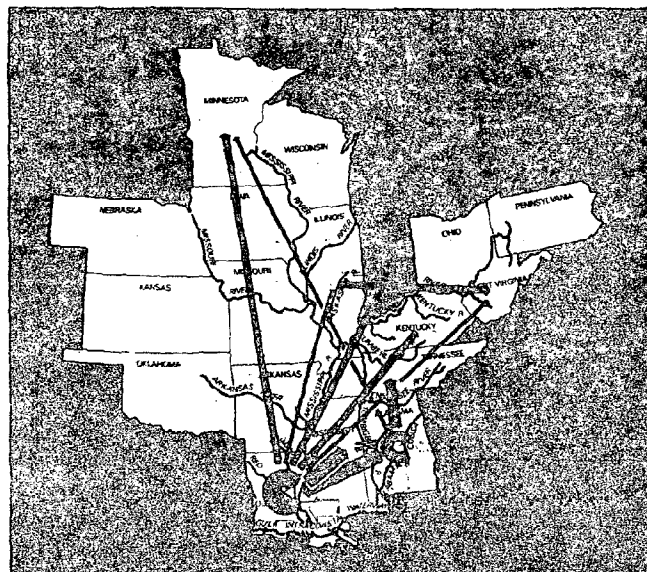
and are transported downriver to Alabama and Louisiana for foreign export. Crude oil shipments originate in the southern part of the

study area and are moved to states in the northern reaches of the study area.

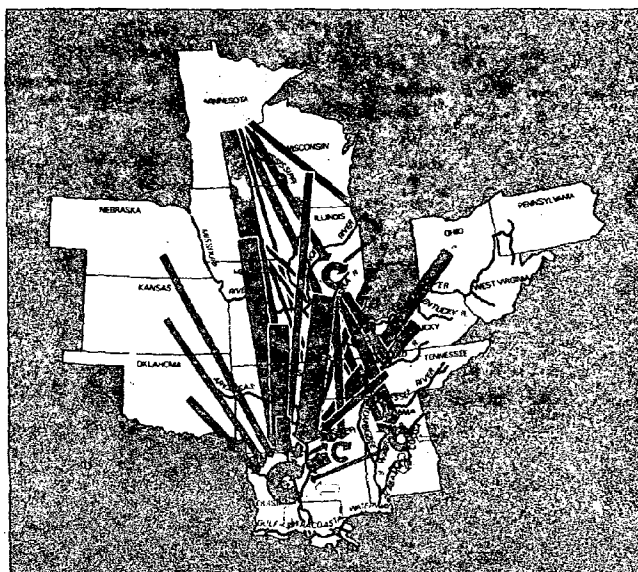
COMMODITY GROUPS

- Grains
- Ores and concentrates, n.e.c.
- Bauxite and aluminum ores
- Coal and coal products
- Crude petroleum
- Petroleum products and lubricants
- Industrial chemicals
- Agricultural chemicals/fertilizers
- Flour and agricultural products, n.e.c.
- Lumber and wood products
- Sugar and molasses
- Primary metal products
- Fabricated metal products
- Scrap metals
- Construction materials
- Mining products, n.e.c.
- Non-durable manufactures, n.e.c.
- Durable manufactures, n.e.c.
- Waste and scrap materials
- Waterway improvement and government materials

Crude Oil

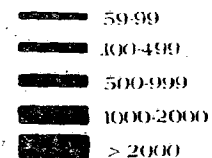


Grains



Legend

1000s of Tons*



Intrastate

To Outside Mid-America

From Outside Mid-America

*Less Than 50,000 Not Shown

Waterborne Commodity Flows

13

For forecasting commerce, more than 400,000 commodity flows were analyzed. Econometric models and other procedures were used for 20 commodity groups and 17 states (divided into 91 sub-regions). Account was taken of new waterway projects (e.g., Tennessee-Tombigbee Waterway, Red River), waterway user charges, lock and dam constraints, and changes in energy use patterns to produce a range of forecasts.

Study findings as they relate to forecast traffic include:

- Total waterborne traffic will double over the forecast period — increasing from 440 million short tons

in 1976 to more than 900 million short tons in the year 2000, a 2.9 percent average annual increase.

- The following commodities will experience high growth:

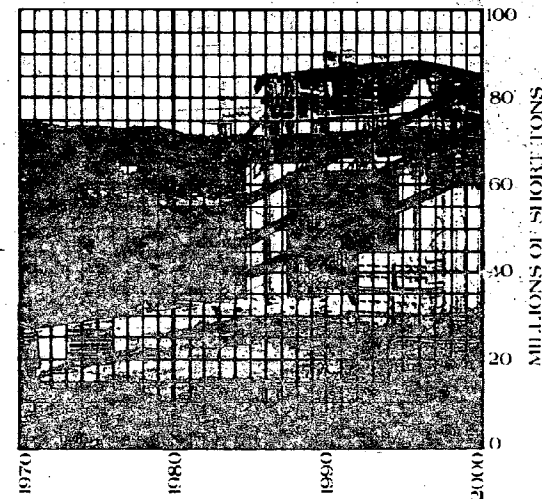
- The waterway user charge and the constraints imposed by the 13 locks and dams which reach capacity over the forecast period will reduce waterborne traffic by as much as 16 percent by the year 2000.

HIGH GROWTH COMMODITIES

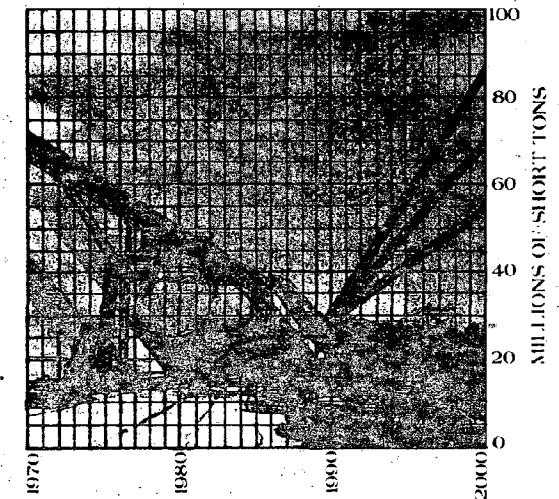
	1976	2000
Grains	44 million tons	79 million tons
Coal	131 million tons	298 million tons
Petroleum Products	87 million tons	152 million tons
Fertilizers	13 million tons	71 million tons
Chemicals	26 million tons	54 million tons

Forecast Waterborne Commodities

Construction Materials,



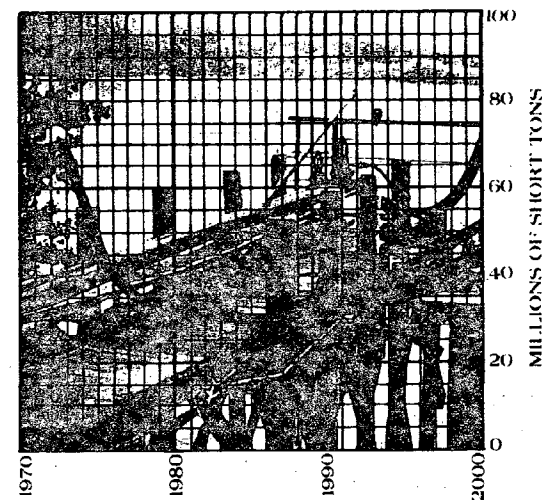
Agricultural Chemicals and Fertilizers



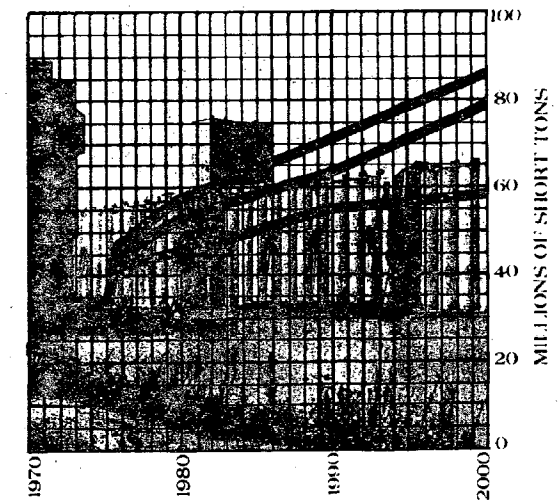
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- The states of Oklahoma, Arkansas, Alabama, Wisconsin, and Minnesota will have the largest percentage increases in traffic.
- The states of Louisiana, Alabama, Illinois, and Missouri will have the largest absolute increase in traffic, accounting for almost 60 percent of the study area's growth between 1976 and the year 2000.

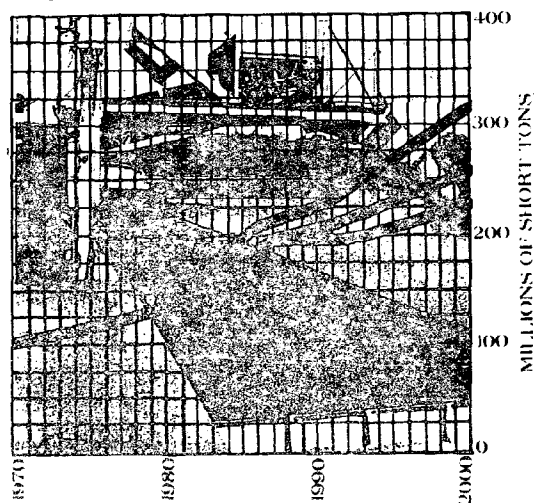
Crude Petroleum



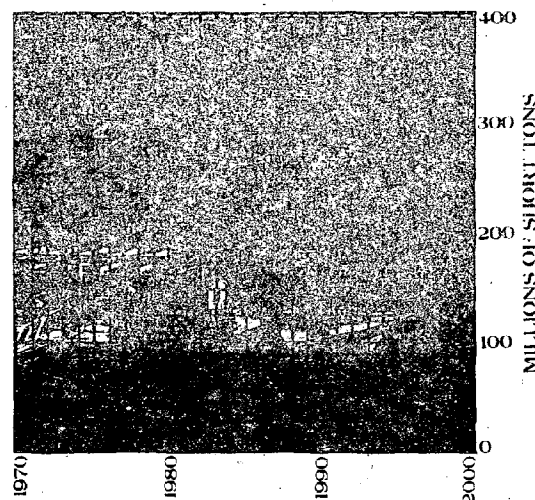
Grains



Coal and Coal Products



Petroleum Products



HISTORICAL AND FORECAST INLAND WATERBORNE COMMODITY RECEIPTS BY STATE

	<u>1976</u>	<u>2000</u>
Alabama	27.9 million tons	80.3 million tons
Arkansas	5.5 million tons	36.0 million tons
Illinois	40.6 million tons	52.6 million tons
Iowa	3.9 million tons	9.9 million tons
Kansas	0.1 million tons	0.1 million tons
Kentucky	18.6 million tons	36.2 million tons
Louisiana	125.4 million tons	284.2 million tons
Mississippi	12.6 million tons	47.9 million tons
Minnesota	8.3 million tons	24.4 million tons
Missouri	14.1 million tons	22.5 million tons
Nebraska	0.5 million tons	1.6 million tons
Ohio	32.3 million tons	67.2 million tons
Oklahoma	0.4 million tons	1.2 million tons
Pennsylvania	39.4 million tons	46.8 million tons
Tennessee	26.5 million tons	38.7 million tons
West Virginia	23.7 million tons	32.5 million tons
Wisconsin	1.9 million tons	8.7 million tons
Other Movements*	61.8 million tons	111.7 million tons
Totals	443.5 million tons	902.5 million tons

*Receipts at ports outside study area originating in Mid-America states.

Legend

- a ● \$1 Billion to \$4 Billion
 b ● \$100 Million to \$999 Million
 c ● Less than \$100 Million

The Future: Port Needs in Mid-America

By the year 2000, cargo at Mid-America's ports will exceed existing capacity by almost 700 million tons annually. Significant capital investments will be required to accommodate these major increases and shifts in waterborne commerce. Coal alone will account for about 35 percent of the capacity deficiency; the utilization of the waterways system for the movement of western coal to midwestern and southern markets will require new handling terminals. Major new facilities will also be required for grains, petroleum products, fertilizers, and construction materials.

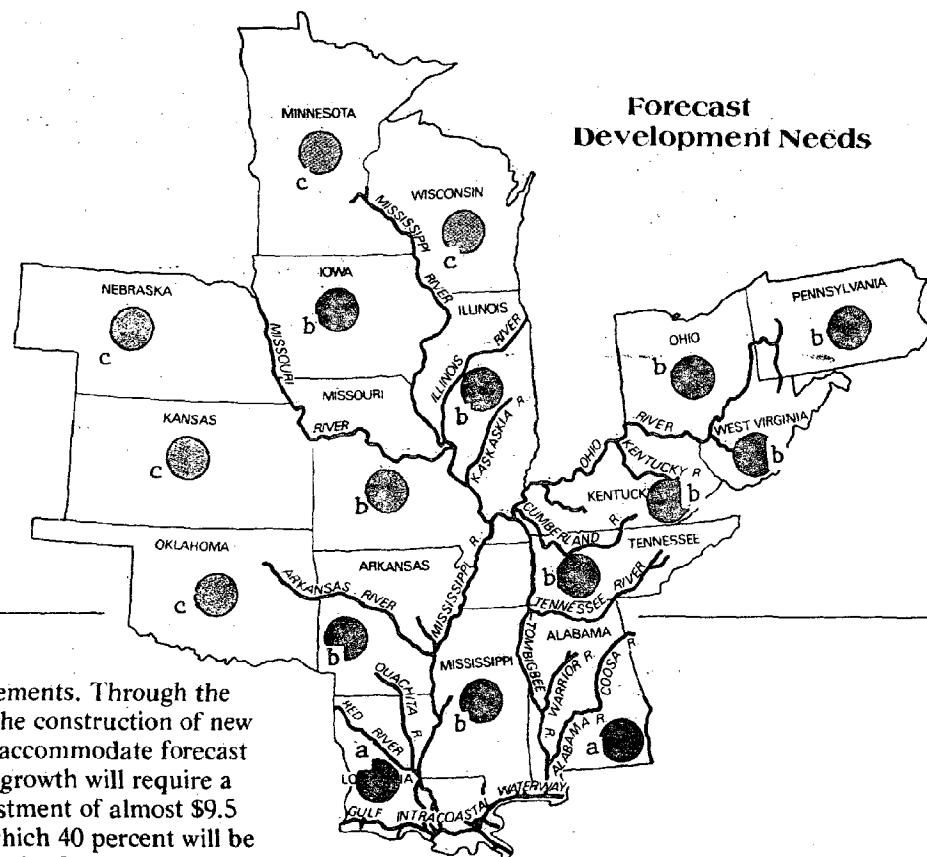
These needs are translated into investment, number of facilities and

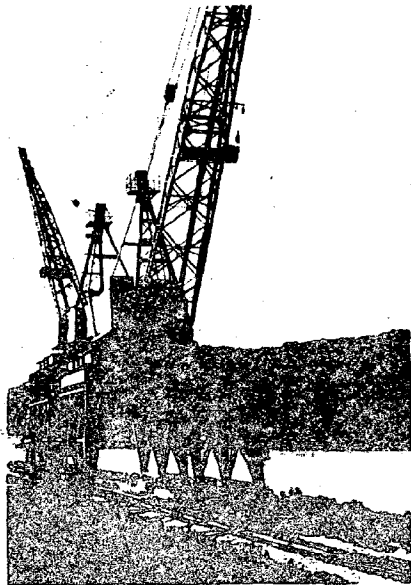
land requirements. Through the year 2000, the construction of new facilities to accommodate forecast commodity growth will require a capital investment of almost \$9.5 billion, of which 40 percent will be expended in the State of Louisiana. This money will be needed for the construction of 1,000 new terminals and the development of 11,000 acres of land; additional acreage will be utilized by the industrial facilities served by these terminals. Over 100 miles of waterfront will be occupied by the new terminal facilities.

Investigation of alternative means of developing new facilities points to the desirability of clustering terminals to conserve

waterfront land and minimize costs for infrastructure.

Major investments will be made for facilities handling the following commodities: petroleum products — \$4.4 billion; coal — \$2.2 billion; cash grains — \$1.4 billion; fertilizers — \$900 million, and chemicals — \$770 million. Additional investments will be needed for barge fleet and other facilities that support water transportation.





**PROJECTED DEVELOPMENT NEEDS,
BY STATE 1980 TO 2000**

	Cost	Number Of Facilities	Acres
Alabama	\$1,228,000,000	219	1,615 Acres
Arkansas	856,000,000	59	947 Acres
Illinois	681,000,000	47	660 Acres
Iowa	113,000,000	6	35 Acres
Kansas	1,000,000	1	2 Acres
Kentucky	637,000,000	36	811 Acres
Louisiana	4,069,000,000	461	3,620 Acres
Minnesota	17,000,000	4	43 Acres
Mississippi	745,000,000	64	810 Acres
Missouri	357,000,000	33	430 Acres
Nebraska	1,000,000	1	2 Acres
Ohio	189,000,000	19	574 Acres
Oklahoma	49,000,000	3	15 Acres
Pennsylvania	100,000,000	10	203 Acres
Tennessee	262,000,000	52	296 Acres
West Virginia	102,000,000	14	244 Acres
Wisconsin	16,000,000	1	12 Acres
Totals	\$9,423,000,000	1,020	10,319 Acres

Institutions for Port Development

Riverfront development is a complex process in which Federal, state and local agencies interact with each other and with private enterprises engaged in water transportation. Federal interests alone may be represented by as many as a dozen agencies. Within the states responsibility for riverfront development may be lodged with state agencies, autonomous port authorities, or local municipalities. (There is autonomy but also cooperation among these interests.) A more complicated and heavily used waterway system will require greater coordination among all participants.

During the next few decades developmental emphasis on the

inland waterways will shift from navigation channels and harbors to port facilities. The waterway system is now largely in place. When the new waterways already under construction have been completed, configuration of the system will have been fixed for the foreseeable future.

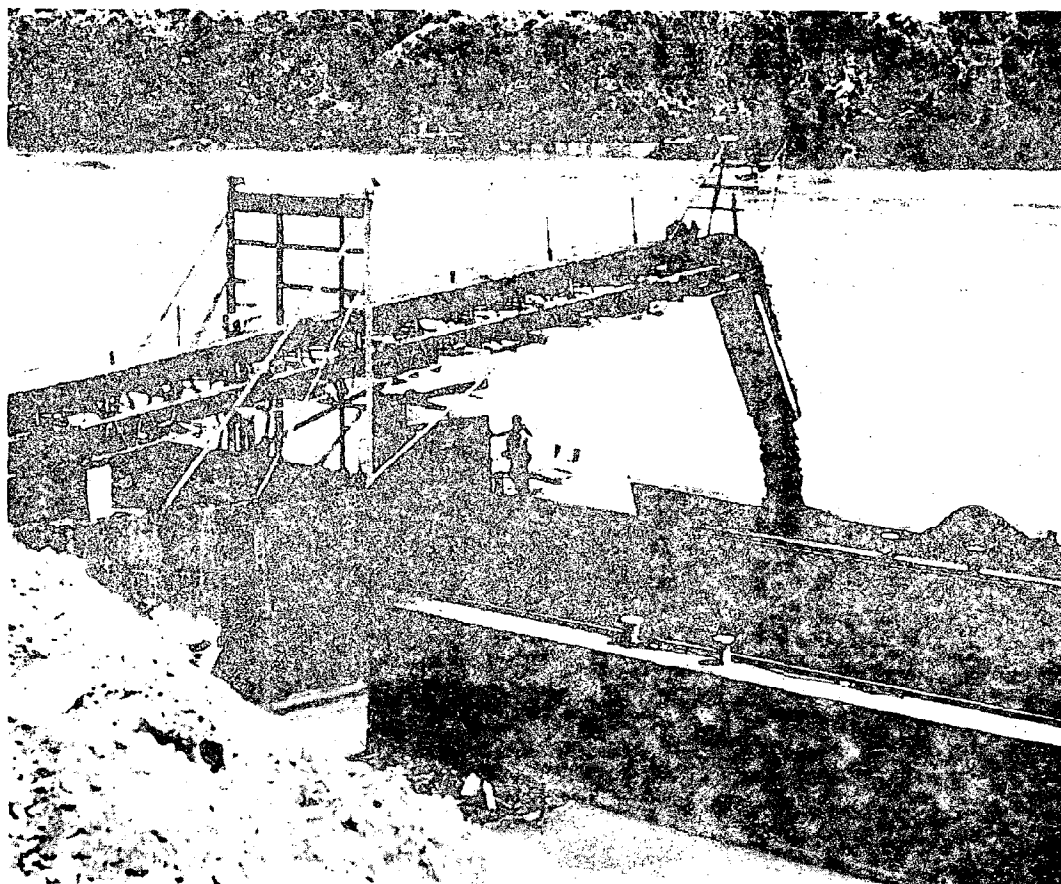
The Federal mandate for promoting waterborne commerce rests on the Maritime Administration of the U.S. Department of Commerce. Section 8 of the Merchant Marine Act of 1920 directs the agency to promote, encourage and develop ports and transportation facilities for water commerce. The act requires the agency to study water terminals, including docks, ware-

houses, and related equipment; to provide advice to communities relevant to local planning for wharves, piers, and water terminals; and to investigate the practicability of harbor, river, and port improvements.

Federal policy has also clearly come to embrace cooperative planning with state governments through regional commissions and the river basin commissions established in accordance with Title II of the Water Resources Planning Act. In Mid-America, river basin commissions have been established in the Ohio, Upper Mississippi and Missouri basins.

State governments make significant contributions to port develop-





ment on the inland waterway system by providing firm legislative authority for exercise of local incentives. Twelve Mid-America states have general enabling statutes that authorize local governments to create port authorities. In three states riverport development is a responsibility assigned to agencies closely integrated with the structure of general government.



To promote proper development on Mid-America's waterways, in the future:

The Federal Government Should —

- Encourage states to make state riverport plans covering all communities on the inland waterway system.
- Make grants to states to improve local, regional, and state planning for waterfront facilities on navigable inland waterways.
- Provide research and analytical support for development of an efficient system of locally owned and administered waterfront facilities.

The State Government Should —

- Designate a principal agency to promote orderly development of riverfront facilities on navigable waters.
- Promote multimodal transportation planning and encourage intermodal coordination of transportation services.
- Cooperate with other states and the Federal Government in promoting effective riverport planning.
- Prepare statewide riverport plans.

The Local Port Authority Should —

- Develop a master plan for the port complex and the adjacent waterfront.
- Coordinate port projects and master plans with other community development efforts to ensure effective multiple use of waterway and waterfront resources.
- Participate fully in regional and state planning efforts, providing technical data and advice on the needs of shallow-draft carriage.
- Encourage the private sector to plan and construct facilities in accordance with port master plans.

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